



# SERVICE BULLETIN

Classification:	Reference:	Date:
EM96-005A	NTB96-065A	November 13, 2000

## 1995 TRUCK/PATHFINDER ENGINE KNOCK AFTER COLD START

**ATTENTION:** This bulletin replaces NTB96-059 and NTB96-030, and amends NTB96-065. The information in the Parts and Claims Information sections of NTB96-065 was updated. Please discard all paper copies of NTB96-059, NTB96-030, and NTB96-065.

**APPLIED VEHICLES:** 1995 Truck (D21)  
1995 Pathfinder (WD21)  
**APPLIED DATES:** Truck - April 21, 1995 to December 31, 1995  
Pathfinder - April 20, 1995 to September 28, 1995  
**APPLIED ENGINE #S:** Truck - VG30-816606C through VG30-912495C  
Pathfinder - VG30-090208Y through VG30-164493Y

### SERVICE INFORMATION

An engine knocking noise may be noted in some vehicles when the engine is started after an overnight cold soak, especially in cold weather. If there is noise, it may be most noticeable during the first several minutes after starting the engine, then gradually diminishes as the engine nears operating temperature. The knock is loudest under light load (1/8 throttle) at 1200-1800 RPM. It is audible in the passenger cabin and outside the vehicle.

### SERVICE PROCEDURE

The procedures in this bulletin cover key points of the repair for this incident. Review the procedures in the service manual for additional information about removal and installation of accessories, manifolds, oil pan, cylinder heads, torque specifications & sequence, sealant application, etc. Take a few minutes before starting the repair to note engine harness routing, position of hoses and clamps, and general layout of components in the engine compartment.

### CONFIRM THE INCIDENT

Confirm the incident matches the description above *before* beginning this repair procedure. The evaluation requires the vehicle to experience an overnight cold soak.

Perform a cylinder power balance test to isolate the knock to a particular cylinder. The knock should be reduced or eliminated when cylinders #3 and/or #4 are disabled.

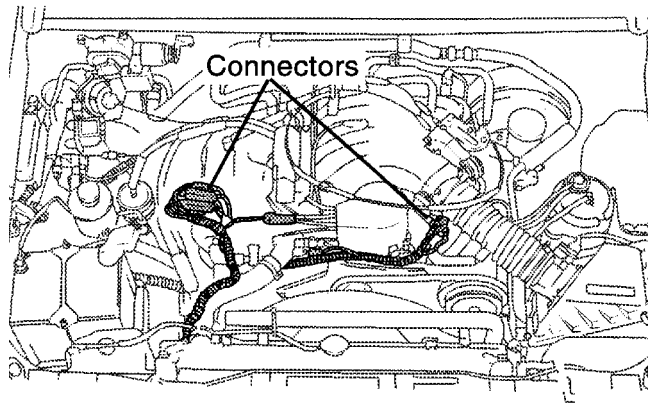
**The repair for this incident consists of replacing the long engine assembly.**

## Table of Contents

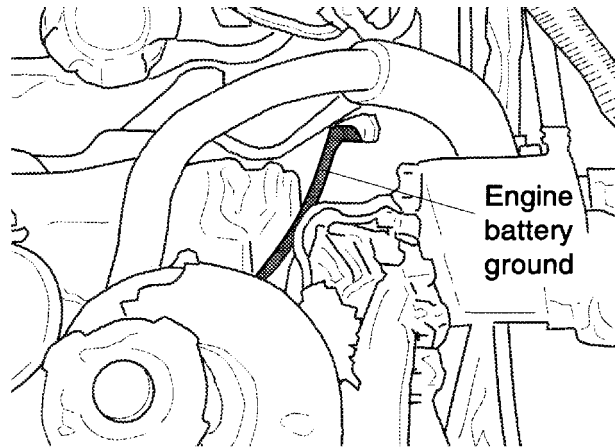
Engine Removal .....	3
Transfer Parts to New Long Engine Assembly .....	7
Install Engine Assembly .....	10
Truck Parts Information .....	12
Pathfinder Parts Information .....	12
Claims Information.....	13

## Engine Removal

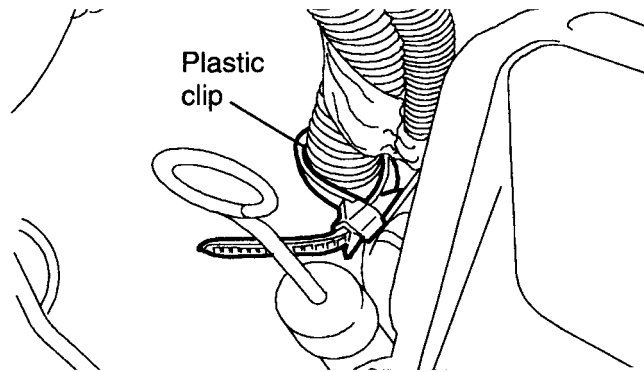
1. Note AM and FM radio presets before beginning this repair.
2. Remove the engine undercovers and hood.
3. Use compressed air to blow the engine free of dust while wearing proper eye protection and a respirator.
4. Release fuel pressure (see MA section of '94 Truck/Pathfinder Service Manual, page MA-12).
5. Disconnect negative cable from the battery.
6. Drain engine coolant and engine oil.
7. Remove heater hoses at engine and reposition for clearance.
8. Disconnect engine harness electrical connectors and ground strap at the right front of the cylinder head. Remove plastic clips securing harness to the bracket at the rear of the cylinder head.



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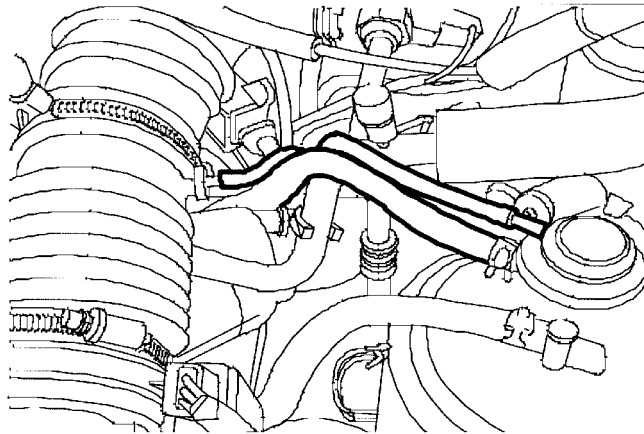


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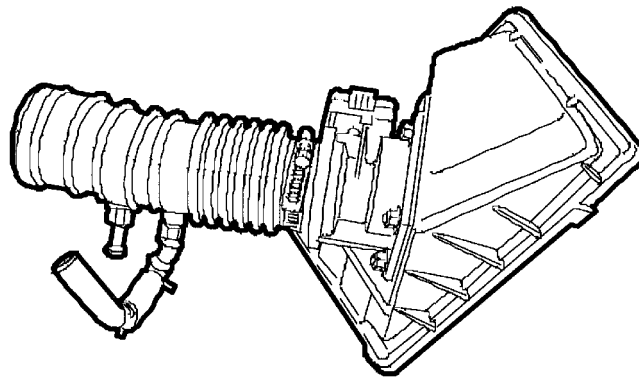
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9. Remove vacuum hoses, and brake booster vacuum hose.



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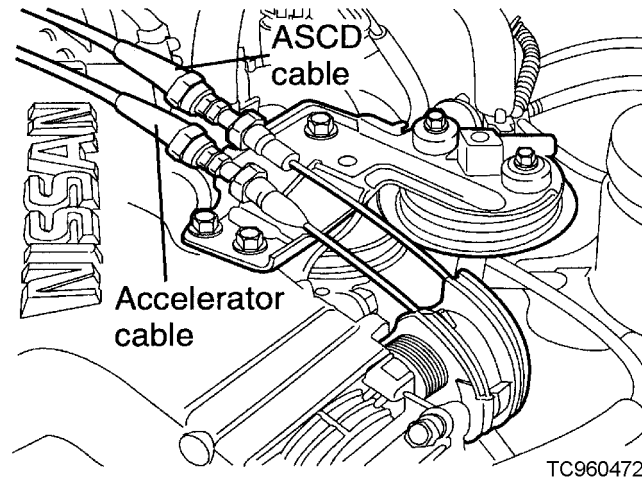
10. Remove air box lid, MAFS and air duct.



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11. Remove throttle cable bracket, leaving cables attached. Remove throttle and ASCD cables from accelerator drum.
12. Remove P/S pump and A/C compressor. Re-position for clearance.
13. Remove A/T lines from radiator.

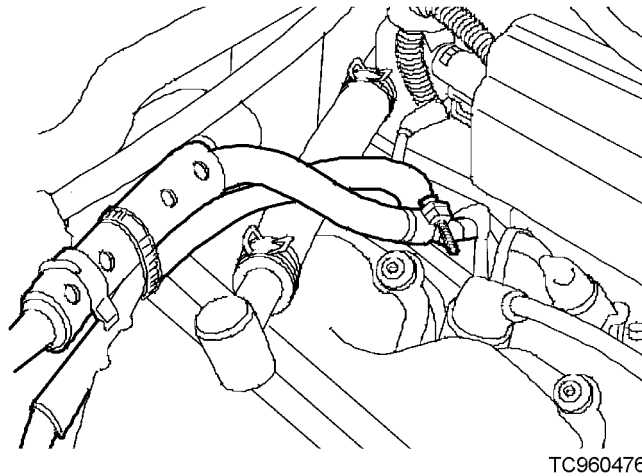
14. Remove top and bottom radiator hoses.
15. Remove radiator, fan and shroud.
16. Remove drive belts.



17. Remove two fuel hoses at engine. Use special tool to remove the fuel hoses (MAC # HFL 4790).

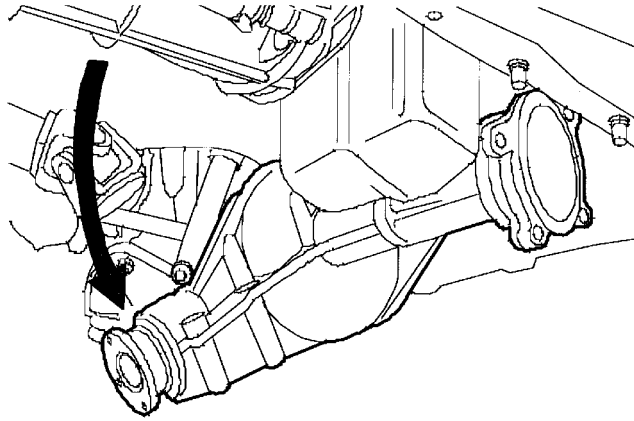
**NOTE:** Replace the fuel tube if it becomes damaged.

18. Remove front exhaust tube.



**Steps 19-21 apply to 4WD models only:**

19. Remove the front differential support (three nuts on top, two bolts at the side, two bolts at the front).
20. Remove drive shaft to differential, and half shafts to each wheel.
21. While supporting the differential on a suitable stand, lower the rear part of the differential first; then remove the assembly.
22. Remove the starter.



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23. Remove wires from alternator and oil pressure sending unit.
24. Attach engine sling. One lifting hook is installed at the rear of the left cylinder head. Install the other lifting hook at the front of the right cylinder head, at the point where the battery ground strap was removed.
25. Remove bolts attaching engine to transmission.
26. Remove engine mount bolts on both sides.
27. Remove transmission lower support brackets on both sides.
28. The engine may be removed without removing the transmission if the following cautions are observed:
  - Support the front of the transmission so it does not drop.
  - On M/T vehicles, make sure the clutch plate is clear of the input shaft before lifting engine.
  - When removing engine, be sure that other components in engine compartment such as the A/C compressor, throttle cables, and connectors are not damaged by the engine assembly.
29. When lifting the engine with the hoist, make sure the lifting chain **does not apply pressure on any fragile components, such as electrical connectors or the air regulator**. Re-position for clearance if necessary. Use rags to protect the valve covers from contact with the chain.
30. Lift engine with hoist and secure it to an engine stand.
31. **Before disassembling the engine, make notes of engine harness routing, vacuum hose routing, and attachment points to ensure correct re-assembly of these components.**

## Transfer Parts to New Long Engine Assembly

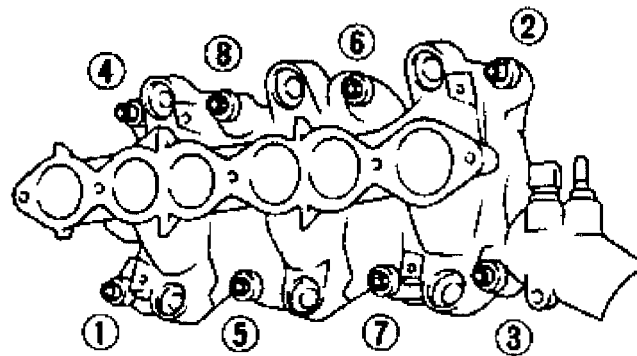
### 1. Remove the intake manifold:

#### A. The following parts should be disconnected to remove the intake manifold:

- All fuel injector harnesses
- Fuel tube assembly (secured by four bolts)
- Engine coolant temperature sensor harness connector
- Thermal transmitter harness connector
- Water hose from thermostat housing

#### B. Remove intake manifold collector, loosen intake manifold bolts in numerical order and remove the intake manifold.

**NOTE:** The thermostat housing does not have to be removed from the suction pipe.



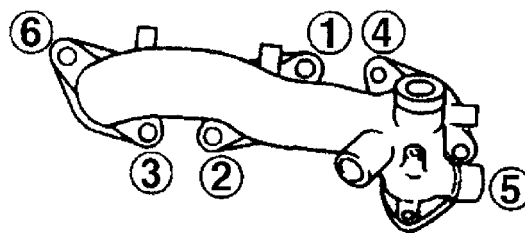
Loosen bolts in  
numerical order.

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### 2. Remove exhaust manifold nuts in numerical order, then remove exhaust manifolds.

LH side  
exhaust manifold

Loosen nuts in  
numerical order

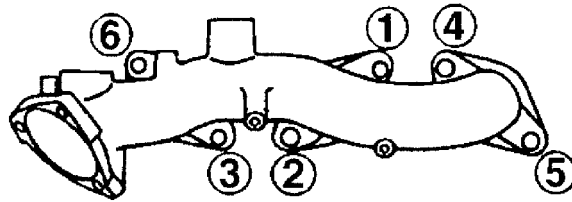


← Engine front

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RH side  
exhaust manifold

Loosen nuts in  
numerical order

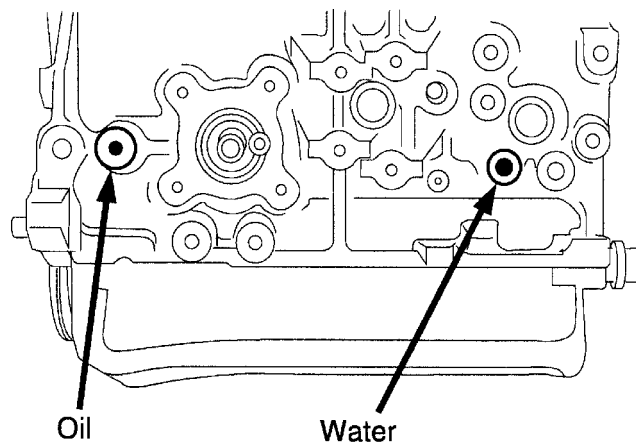


Engine front ➡

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3. Remove one water jacket plug located near cylinder #1, and one oil gallery plug located near cylinder #5. Apply sealant to the water and oil plug threads, and install on the new block. Be careful not to allow any foreign material into the oil passage.

**NOTE:** Remove the original gasket sealer from the bolt threads.

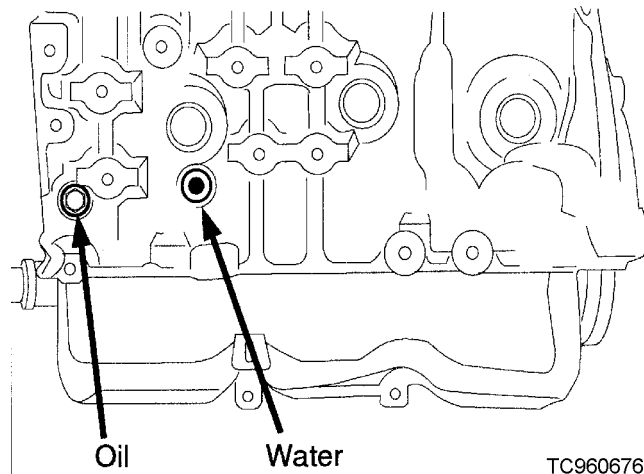


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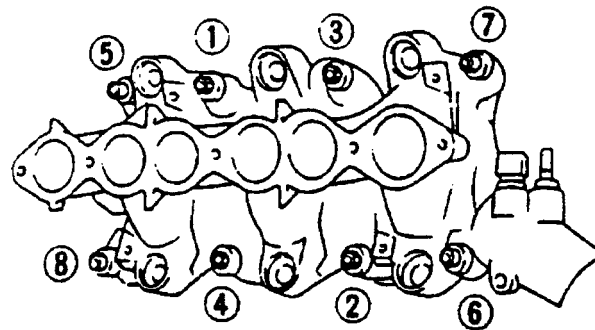
4. Remove the water jacket plug located near cylinder #2, on the outside of the block. Apply sealant to water plug threads, and install the plug on the new block. Remove the oil plug to the left of cylinder #2. Replace the washer (P/N 11026-01M02) on the oil gallery plug, and install the plug on the new block. Be careful not to allow any foreign material into the oil passage.



**NOTE:** Remove the original gasket sealer from the bolt threads.



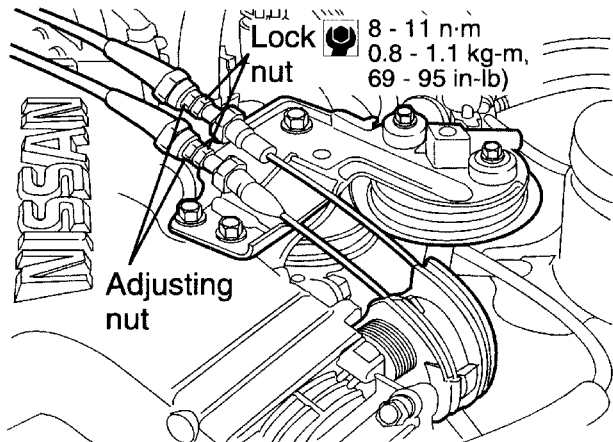
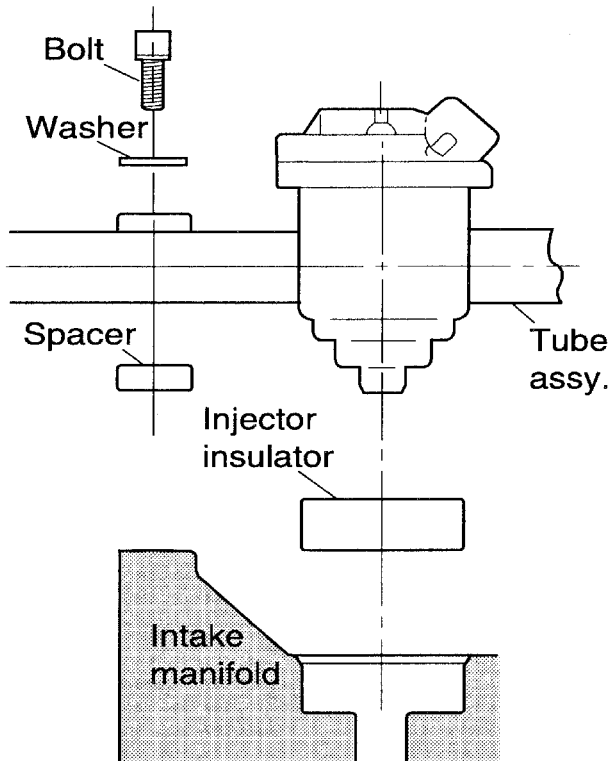
5. Install new oil filter mounting stud.
6. Carefully remove the dipstick guide tube. Apply Loctite® 540 or equivalent to the dipstick tube, and press it into the new block. Install in the same position on the new block. Check the new block for alternate dipstick tube installation points, which may not be plugged. Install brass plugs if necessary (P/N 11022-U6700).
7. Install connector to knock sensor on top of block before thermostat housing and intake manifold. There is limited access to the knock sensor after these parts are installed.
8. Install intake manifold. Install all parts removed in step 1, page 5. Tighten all bolts in numerical order.
  - Tightening procedure:
    - A. Tighten all bolts and nuts to **2.2-3.6 ft-lb** (3-5 N•m, 0.3-0.5 kg-m).
    - B. Tighten all bolts to **12-14 ft-lb** (16-20 N•m, 1.6-2.0 kg-m).  
Tighten all nuts to **17-20 ft-lb** (24-27 N•m, 2.4-2.8 kg-m).
    - C. Tighten all bolts to **12-14 ft-lb** (16-20 N•m, 1.6-2.0 kg-m).  
Tighten all nuts to **17-20 ft-lb** (24-27 N•m, 2.4-2.8 kg-m).



Tighten bolts in  
numerical order

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9. Install the fuel tube assembly:
  - Tape the fuel tube spacers to the fuel tube before installation.
  - Install new fuel injector insulators. Ensure the insulators are properly seated in the intake manifold.
  - Torque the 4 fuel tube securing bolts to **12-15 ft-lb** (16-21 N•m, 1.6-2.1 kg-m).
10. On M/T vehicles, install a new pilot bushing (P/N 32202-B9500). On A/T vehicles, install converter pilot P/N 12330-14L00.



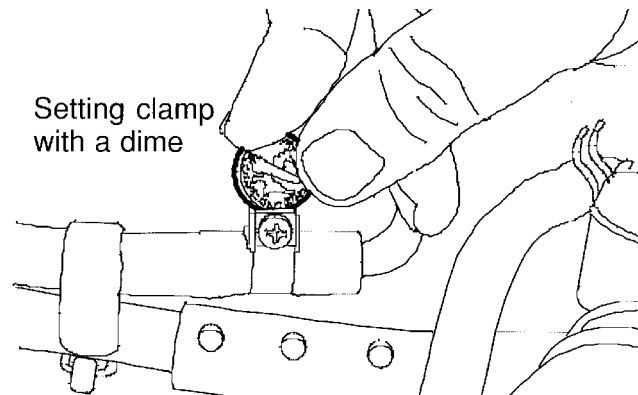
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### Install Engine Assembly

Installation is reverse of removal.

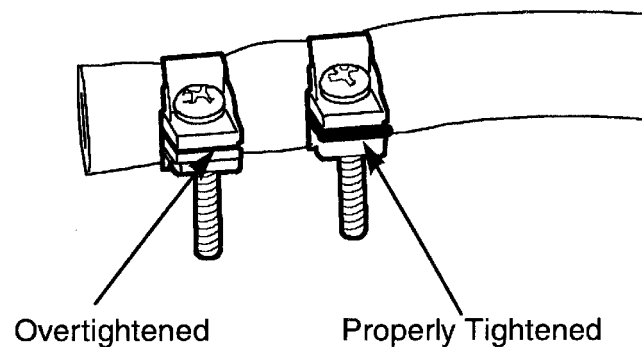
1. Pay special attention to the following points during installation:
  - Harness routing and attachment points
  - Electrical connectors are securely fastened
  - A/C fittings are secure
  - Connect the battery cable positive and negative terminals with the ignition switch "OFF" after all the repairs are completed.
2. Adjust the throttle cable:
  - A. Loosen the lock nut, and tighten the adjusting nut until the throttle drum starts to move.
  - B. Turn back the adjusting nut 1.5 to 2 turns, and torque the lock nut.  
**CAUTION:** Check that the throttle valve opens fully when the accelerator pedal is fully depressed, and that the throttle valve returns to the idle position when released.
3. Adjust the ASCD cable:
  - A. Loosen the lock nut, and tighten the adjusting nut until the throttle drum starts to move.
  - B. Turn back the adjusting nut 0.5 to 1 turn, and secure the lock nut.

4. When installing the fuel inlet and return hoses, tighten the hose clamps by hand. The clamp is properly tightened when a dime will just fit into the gap. An overtightened clamp may damage the hose and cause a fuel leak.



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5. Start and run the engine at 2000 rpm for five minutes.
6. Enter the radio pre-sets noted at the beginning of this procedure.
7. Shut the engine off.
8. Replace the engine oil and filter.
9. Allow the engine to cool down. Then re-start and allow the engine to idle.
  - Check for fuel, coolant, power steering, or other oil leaks.
  - Check coolant, power steering, and other fluid levels.



TC960520

**PARTS INFORMATION - D21 TRUCK**

DESCRIPTION	PART #	QUANTITY
Engine ass'y- long (2WD)	1010B-0S910RE	1
Engine ass'y- long (4WD)	1010B-0S210RE	1
Gasket- intake manifold, (plenum)	14033-75P00	1
Gasket- manifold to head	14035-V5202	2
Gasket- exh. manifold	14037-V5000	2
Gasket- exh. man. to tube	20691-30P00	2
Washer- oil gallery	11026-01M02	1
Insulators- injector	16635-88G00	6
Stud- oil filter	15213-W0400	1
Guide- oil level gauge <sup>1</sup>	15146-01P00	1
Pilot bushing (M/T only)	32202-B9500	1
Converter pilot (A/T only)	12330-14L00	1
Kit- crankshaft pulley <sup>2</sup>	12303-12G27	1
Nut- exhaust manifold	14039-W1500	As Required

**NOTES:**

1. Replace only if damaged.
2. Required for vehicles originally equipped with 25 mm crankshaft.

**PARTS INFORMATION - WD21 PATHFINDER**

DESCRIPTION	PART #	QUANTITY
Engine ass'y- long	1010B-0S210RE	1
Gasket- intake manifold, (plenum)	14033-75P00	1
Gasket- manifold to head	14035-V5204	2
Gasket- exh. manifold	14037-V5000	2
Gasket- exh. man. to tube	20691-30P00	2
Washer- oil gallery	11026-01M02	1
Insulators- injector	16635-88G00	6
Stud- oil filter	15213-W0400	1
Guide- oil level gauge <sup>1</sup>	15146-01P00	1
Pilot bushing (M/T only)	32202-B9500	1
Converter pilot (A/T only)	12330-14L00	1
Kit- crankshaft pulley <sup>2</sup>	12303-12G27	1
Nut- exhaust manifold	14039-W1500	As Required

**NOTES:**

1. Replace only if damaged.
2. Required for vehicles originally equipped with 25 mm crankshaft.

## CLAIMS INFORMATION

Submit a Primary Failed Part (PP) line claim using the following claims coding:

DESCRIPTION	PFP	OP CODE	SYM	DIA	FRT
RPL Long Engine Assy.	(1)	AA20AA	ZL	45	(2)

### NOTES:

(1) Please reference the "Parts Information" tables on page 12, and use the indicated remanufactured engine P/N as the PFP.

(2) Please reference the current Nissan "Warranty Flat Rate Manual" and select the applicable AA20AA Flat Rate Time, including any "add-ons" for A/C and P/S.

